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ABSTRACT

This report describes and evaluates a project that was designed to establish a model process for vertical curriculum articulation involving secondary and postsecondary instructors of selected occupational programs. The process consisted essentially of three phases: (1) an initial workshop in which participants were provided with formal instruction in the skills and knowledge needed to utilize job family clustering, task analysis, and performance-based instructional objectives in the articulation process; (2) a joint workshop in which members of articulation teams (secondary and postsecondary instructors of a common subject) met for the purpose of articulating their individual programs (which included mutual examination of course content, course objectives and skill levels, and joint determination of objective and skill levels); and (3) an advisory panel meeting in which outside advisors reviewed the results of the articulation effort and made comments on general and specific aspects of the project. (The project was considered successful by the director, the participants, and the advisory panel members; it was also viewed favorably by a third-party evaluator, whose review is included as a part of the report.) Among appended materials, which together constitute slightly more than half of the report, are the following: (1) Sample Skill Chart; (2) Instructional Learning Package for Articulation; (3) Sample Curriculum Articulation Objective Sheet; and (4) Samples of Completed Articulation Materials Sent to Advisory Panelists. (DTT)

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FINAL REPORT

A MODEL PROGRAM FOR THE ARTICULATION OF SECONDARY AND POST-SECONDARY VOCATIONAL EDUCATION PROGRAMS IN NEW HAMPSHIRE

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SEPTEMBER 1977

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ERRATA

1. Page 4. FIRST PARAGRAPH, "...Claremont Vocational Center at Stevens High School, involved in the..."

   Should read *"...not involved in the..."*

2. Page 14. 10. New Hampshire Vocational Technical Association

   Should read *New Hampshire Vocational Association*

   2. "Variation is accepting minimum standard..."

   Should read *"Variation in accepting minimum standard..."*

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INTRODUCTION

The State of New Hampshire has offered high school graduates occupational training through its vocational technical college system for a number of years. In the past five years, support for statewide occupational training for students in secondary schools has developed.

The New Hampshire State Department of Education is implementing a plan to establish 20 vocational centers at the secondary school level. In reviewing the present secondary and post-secondary vocational technical programs, many program titles for occupational training are of the same or similar description. Both educators and citizen advisory groups have begun to indicate concern about possible duplication of efforts at the two training levels.

If duplication is taking place, the end result of expanded occupational training for New Hampshire citizens could produce wasted time, effort, and monies; none of which the state can afford. The real objective of expanded training should be to improve employment opportunities in a wider range of employment levels for the people of the state.

Obviously, to determine the extent of duplication and to correct it, if it existed, educators at both levels of training were required to meet to discuss program content.

This activity is more commonly referred to as articulation. Articulation is defined as an instructional plan that allows a student access to an occupational training program which provides continuity between two or more educational levels.

In June, 1976, representatives from the Vocational-Technical and Post-Secondary Divisions of the New Hampshire State Department of Education met with representatives of Keene State College to discuss the development of a model plan for articulation. The plan involved identification of specific program content of occupational programs at both levels, to determine if duplication did in fact exist and to what extent.

The representatives recognized that articulation between educational levels involved several components: 1) there can and should be on-going communication between administrators and instructors at differing educational levels; 2) jointly agreed to recruiting and admission policies determined; 3) uniform guidance and counseling procedures and 4) consistency of information available to students at both levels of education. The most critical issue of articulation, however, centers in the curriculum; and, therefore, it was agreed the first effort in articulation should concentrate on secondary and post-secondary vocational instructors meeting to discuss curriculum content. The goal then was to establish a model process for vertical curriculum articulation involving secondary and post-secondary instructors of selected occupational programs.

Keene State College had already initiated a program involving secondary school instructors in a curriculum project revolving around instruction in vocational programs. This program, entitled "Alternative Approaches to Individualizing in Vocational Education" (AAIVE), had selected five former exemplary programs and instructors to participate. It was determined that the elements of instructional development for articulation were similar to the requirements for activities in the AAIVE Project individualized instruction efforts. The participants of the AAIVE Project were requested

to participate in the articulation model as well as conducting the AAIVE activities. All AAIVE participants agreed to participate. Therefore, Keene State College and AAIVE Project Director, John Faust, would develop the proposal and carry out articulation activities.

In November, 1976, a proposal for an articulation project between selected secondary and post-secondary instructors was developed by Keene State College and approved and funded by the State Department of Education Educational Professional Development Office (EPDA) of the Vocational Technical Division.

The approved proposal was designed to establish a model process plan for articulation efforts between secondary and post-secondary programs having the same or similar program titles. (See Appendix #1 for the original proposal for articulation.)

ARTICULATION PREPARATION PROCESS AND ITS PROBLEMS

Following the approval of the articulation proposal, it was essential that vocational administrators of the secondary and post-secondary programs be informed as to the goals of the articulation efforts. Through a series of formal and informal meetings, the vocational administrators endorsed the plan for establishing a model for articulation.

As earlier described, five exemplary programs in the state had been selected for participation in the individualized instruction AAIVE Project being conducted by Keene State College. Instructors representing these programs were asked, also, to become the nucleus of the articulation efforts. Instructors representing the following programs agreed to participate:

Child Care - Salem Vocational Center
Culinary Arts - Dover Vocational Center
Electronics - Nashua Vocational Center
Power Mechanics - Plymouth Vocational Center
Welding - N.H. Vocational Technical College, Manchester

A sixth program, Health Occupations, Claremont Vocational Center at Stevens High School, involved in the Individualized Instruction Project, was also chosen.

Having obtained agreement to participate from the aforementioned instructors, complementary instructors were sought. Instructors representing the following programs and schools were selected as complementary instructors to participate in the articulation effort:

Child Care - Keene State College (Child Development Program)
Culinary Arts - N.H. Vocational Technical College, Berlin
Electronics - N.H. Vocational Technical College, Nashua
Power Mechanics - N.H. Vocational Technical College, Laconia
Health Occupations - N.H. Vocational Technical College, Claremont
Welding - Berlin Vocational Center, Berlin, NH

(See Appendix #2 for List of Participants for instructors' names.)

A review of literature regarding articulation efforts in other states such as Michigan, North Carolina, and Minnesota revealed the essential components needed to allow articulation to succeed. In order to accomplish articulation, the following three instructional elements needed to be defined by all participants:

1. Identification of Job Titles to be Trained for in the Program

   These are identified by the Dictionary of Occupational Titles (D.O.T.) as compiled by the U.S. Department of Labor.

2. Skill Analysis of One or More Occupations Trained for in the Program

Each instructor must pick the occupation that represents the most extensive skill base, and then list all skills for that occupation in a simple to complex order. Skills are then paraphrased and become units or skill titles on the skill analysis chart.

(See Appendix #3, Sample Skill Chart.)

3. Performance Objectives for Instruction Composed from the Skill Analysis Statements

Using the identified skills, instructional performance objectives are written. These objectives tell the student:

a. what he/she is to do
b. the condition under which the activity is to be performed
c. the standard he/she is to achieve.

Both the original participants and their complementary groups, when surveyed, had varying degrees of background in these in-put elements for articulation. It was impossible to free all participating instructors from classroom responsibility for the time necessary to develop the elements necessary for articulation. It was possible, however, to accomplish the in-put materials by creating an instructional learning package describing how to construct the essential elements described above. (See Appendix #4 for a sample of the Instructional Learning Package.)

Instructional Learning Packages were distributed to participants. All participants were invited to attend a two-day planning workshop in March, 1977, designed to aid in the completion of the Instructional

Learning Packages.

Due to classroom responsibilities, only five of the twelve participants were able to attend the workshop. The Project Director visited the other seven participants at their schools to clarify any questions concerning the preparation of the Instructional Learning Package. Following the workshop and site visits, each instructor began to assemble his/her own program using the format established in the instructional package. By June 1, 1977, all instructors had submitted finished packages for editing and typing.

ARTICULATION WORKSHOP

In late June, 1977, all participants attended a one-week workshop in Articulation at Keene State College. Participants were provided with copies of their own and their counterpart's curriculum materials. This, as described earlier, consisted of identified occupational titles, skill analysis, and the instructional objectives of each program.

The first task of the secondary/post-secondary instructor teams was to identify the three categorical possibilities of the occupational titles. Was the occupation:

a. associated primarily with secondary programs;
b. associated primarily with post-secondary programs;
c. determined to be appropriate for secondary or post-secondary programs (articulated).

A special Occupational Listing chart was designed for use in this activity. The chart reflected three occupational categories: A) mainly secondary; B) articulated; and C) mainly post-secondary.

Once this activity was accomplished, only the articulated categories

of occupations were emphasized in the additional process steps of the workshop. Participants discussed and agreed to the analysis of skills for the most comprehensive occupation in the articulation cluster.

Next, each participant reviewed with his/her counterpart the instructional objectives related to each skill. Initially, terminal objectives were discussed. Determination of the use of this objective at one or both levels was determined by abbreviations. If the objective was only used by secondary, an "S" would be placed in a column next to the objective. If the objective was only used by post-secondary, a "PS" would be placed in the column. If the objective was used by both secondary and post-secondary levels, a "S-PS" would be placed in the column. (See Appendix #5 for sample.)

The same process was then completed for all interim objectives related to each occupation skill. In some cases, terminal and interim objectives were agreed to in totality by both secondary and post-secondary instructors. These were most often found in what are usually called the "core" skills. These are skills demanded of individuals entering a specific occupational cluster, regardless of the specific job role the individual will carry out in the cluster.

Variations in instructional objectives were found in the practical or knowledge bases of specific skills. Usually, the post-secondary participant could agree to all objectives identified by the secondary participant. However, additional objectives defining further depth or emphasis were required.

Participants were also asked to write a statement defining any problem area that prevented articulation from taking place. In no case was there an area that caused a problem. There was joint concern over occupational job descriptions as related in the Dictionary of Occupational Titles. Instructors found that the titles of some occupations defined in the D.O.T. differed significantly from their own definitions. Since, however, there was agreement on their own definitions, no problem existed. Participants indicated that in some articulation efforts it may be necessary to write detailed job descriptions for each articulated occupation.

To summarize the workshop results, the secondary and post-secondary instructor team produced a jointly agreed to Occupational Skill Chart containing a total occupational cluster. Each chart identified the occupation by instructional level and the skill base. Task analysis was accomplished for one or more key occupations in the cluster. All instructional objectives were categorized as to appropriateness and level.

At the completion of the workshop, each participant was asked to identify a member of their craft advisory committee who would be willing to review articulation results to validate what was achieved. (See Appendix #2 for Articulation Process Validation by Craft Advisory Panel.)

Following the articulation workshop, the Project Director arranged for the editing and typing of completed workshop products. The twelve individuals named as representatives to a craft advisory panel were contacted and invited to participate in a meeting to validate the results of the articulation model process. Completed products of the workshop were sent to advisory panel members who expressed

interest in attending the meeting. (See Appendix #6 for Sample Package.)

In early August, 1977, the craft advisory panel meeting was held. Project participants and advisory panel members had an opportunity to discuss the workshop results. The panel members were asked to address three vital items:

1. the importance of the articulation effort and a critique of the process;
2. the appropriateness of occupational titles and skill base for the occupational area they represented;
3. the appropriateness of both objectives and levels of instruction.

Advisory panelists were provided with an evaluation sheet addressing these items. However, they were requested to relate any concerns they found.

The specific conclusions and recommendations are discussed in detail in the next section of this report. It is important to indicate here, however, that all advisory members agreed to the importance of articulation and were impressed with the quality and extent of the materials produced by participants. They unanimously recommended that the effort be continued until all steps necessary to achieve total articulation are implemented and students benefit from the results.

Both participants and advisory members saw the need for further efforts using two methods:

A. Utilizing the participants in this articulation effort to further define instructional content and create competency testing for secondary students continuing their skill training at the post-secondary level.

B. Using the model process created in this project, continue to articulate the remaining occupational skill areas found in both secondary and post-secondary programs.

In addition to the advisory group's comments, the project staff requested comments from participating instructors regarding the results achieved. The original process plan for the project indicated that a follow-up participant meeting might result from the advisory panel meeting. Instructors' comments indicated that the advisory panel review was successful and, therefore, a follow-up participant meeting was unnecessary.

RESULTS AND RECOMMENDATIONS

As we discuss the results of the articulation effort, we must re-state the project goal for the reader. The project was designed to establish a model process for Vertical Curriculum Articulation involving secondary and post-secondary instructors of selected occupational programs.

The results appear to have been successful in achieving this goal. The premise that for successful results, each participant must come to the articulation meeting with well-defined lists of occupational titles, skill analyses and instructional objectives appeared to be accurate. Instructors indicated this to be a suitable basis for discussion. Without such a basis, time and effort are wasted. Using a well-defined base, instructors were able to articulate their programs in a 20-40 hour time frame. The result is significant when related to instructors' time and reimbursement costs if other programs are to be articulated.

Participants generally agreed that a change of attitude regarding instructional programs at the "other level" was an important outcome.

Many instructors at both levels, including the participants, have in the past been critical of training programs at the "other level." A detailed understanding of each other's programs and instructional goals have tended to change previous negative attitudes about the quality of training at each level. Many participants have indicated a sincere interest in visiting their counterpart's program.

Prior to the articulation process, it was assumed by the Project Director and participants that areas of disagreement might arise--specifically, an occupational title or an instructional objective that could not be agreed upon. This did not hold true with the six occupational areas used in this model study. What little disagreement did arise concerning occupational titles, job descriptions, or instructional objectives, was quickly overcome through discussion. Future efforts at articulation may or may not have this result. Therefore, if disagreements arise, a procedure must be worked out to resolve any such issues.

It was found that the formal structure of a workshop with participants from both levels meeting face to face may not always be necessary for articulation. The important factor is that both participants have the same information, in the same format, relative to each other's programs. In one instance, it was impossible for the secondary instructor to personally attend the workshop during the designated week. His post-secondary partner attended the workshop and the project staff arranged for daily telephone communication to take place. At a later date, the two participants met for one day to review and confirm the results achieved through telephone conversations. Again, the fact that both participants had the written information

concerning each other's programs in their possession during the telephone articulation, appeared to be the critical issue.

Following the completion of the articulation effort by instructors, an advisory panel meeting was held to review results. Advisory panel members' concerns are best reviewed in two categories. General Concerns which affect all articulated curriculum and those which have been translated into a series of questions and answers expressed during the advisory panel review meeting. Specific Concerns those which were unique to one or more occupational areas, yet important to consider in determining effectiveness of articulation in specific occupational fields.

General Concerns:

1. Have the participants covered all skills?

   Recognizing that only one participant from each level of instruction participated in the model effort, it is assumed that the skills listed reflect what is covered in these two programs. There is need to have the results reviewed by all other instructors of the same occupational program at both the secondary and post-secondary levels.

2. Could an outsider understand the materials as written?

   It would be essential to provide non-educators with background as to instructional system development. The results of articulation at this time are assumed to be for educators' use only.

3. Is pre-testing now available? If so, from whom?

   Limited pre-testing is now used by post-secondary programs. Pre-testing or the development of a criterion-referenced evaluation system must be studied further. This is considered to be the next step in articulation.

4. Is the difference in depth and emphasis between secondary and post-secondary programs clearly defined?

   Each of the six model programs has attempted to define,

through examples, the difference in depth and emphasis between secondary and post-secondary programs. Generally, the post-secondary objectives reflect greater depth and emphasis. It is assumed that maturity of students, greater prerequisite learning and more concentrated occupational skill instruction time accounts for this greater depth and emphasis at the post-secondary level.

5. Within the objectives stated, are there varying levels of accomplishment for students? If not, should there be?

Only minimum competency standards are described. Individual instructors may wish to vary the levels of competency. Methods of accomodating individual instructor's competency standards must occur in future articulation studies.

6. Are the objectives, as stated, actually in a simple to complex order?

The two participating instructors in each team made every attempt to develop objectives in simple to complex order. Interpretation and instructional methodology vary; therefore, other instructors may wish to rearrange the materials the participants produced.

7. Are the secondary and post-secondary schools now addressing the issue of competency-based performance versus time-based performance?

Generally, no statewide accepted policy of post-secondary instruction exists. Articulation project participants now recognize the value of competency-based performance. Students must be measured on competencies with procedures for advanced placement established at the post-secondary level.

8. Is there a commitment to articulation from the administrative or decision making level?

An interest in articulation has been expressed by state and local administrators for the past five years. Since this project is the first effort at articulation, the disposition of its results will answer this question.

9. What steps are necessary to assure continuation of the articulation effort beyond this model project?

The answer is related to the previous question. Administrators will play an important role in determining future efforts. Communication and dissemination of project results should also aid in emphasizing additional needs in articulation. Administrators at the state and

local level must seek outside financial support, possibly through state advisory councils, to continue the articulation efforts begun here.

10. How can the results achieved in this project be communicated to educators and citizens?

    Results will be presented to the following educator-citizens groups:

    New Hampshire Vocational Technical Association
    New Hampshire Committee for Technical Institute and Vocational Technical Colleges
    New Hampshire Vocational Technical Advisory Council
    State Department of Education Vocational Technical Division Post-Secondary Division

11. How do teacher participants perceive the value of the articulation process?

    Each participant agreed that the most valuable outcome of the articulation process was the opportunity to participate in a face to face discussion of program efforts with his/her counterpart at the other level.

Specific Concerns:

1. Terminology currently used in some occupational areas to describe job titles is not congruent with D.O.T. titles.

   The Dictionary of Occupational Titles is currently being updated. Although problems exist, it is the only comprehensive source reflecting job titles and descriptions nationwide.

2. Variation is accepting minimum standard and/or licensure exists and must be considered in articulation. Examples: Culinary Arts has many externally applied standards; Health Occupations has little or no agreed upon standards.

   In instances where licensure is a must, results of articulation must be reviewed with licensing boards. Final decisions on potential articulation may be in the hands of such boards. Articulation efforts by educators may pave the way for acceptance procedures to be developed by licensing boards.

3. Establishment of minimum competencies in related skills of Mathematics, English, and the Physical Sciences, would enhance articulation in occupational areas where these

skills are essential.

A need does exist to include these related areas in future articulation efforts.

OVERVIEW OF RESULTS AND RECOMMENDATIONS

We have attempted to describe the results of the project through a detailed explanation of the articulation workshop and the follow-up advisory panel review. In total, it was clear that participant and advisory panel members were pleased with the process and results of this initial effort to begin articulation between secondary and post-secondary vocational education programs in New Hampshire.

We have pointed to many concerns that are unresolved at this time. The most vital recommendation expressed by participants and advisory panel members in this initial effort in articulation, is to assure continuation of future efforts.

Educational and citizen advisory groups in New Hampshire must review the results achieved in this project. They must then establish a plan to conduct further articulation. One method might be to allow the participants in this original model an opportunity to further develop the effort through designing competency-based testing that may be utilized to identify appropriate placement of students at the post-secondary level. Another method might involve additional occupational areas in completing the steps of the model devised for this project. A third method might be to initiate articulation in areas other than curriculum. Admissions policies, guidance and counseling

procedures and more joint meetings between administrators and instructors at both levels should be considered.

Through this initial effort, articulation has been seen to be a constructive force that will allow vocational educators and concerned citizen groups to reorganize the potential to provide efficient and useful occupational skilled training for youth and adults of New Hampshire.

THIRD PARTY EVALUATION OF THE ARTICULATION OF SECONDARY AND POST-SECONDARY VOCATIONAL EDUCATION PROGRAMS

SEPTEMBER 1977

Submitted by:

Dr. Gerald L. Thomas

Keene, NH

INTRODUCTION

The purpose of this evaluation is to assess the accomplishments of the goals and objectives of the project titled: "Articulation of Secondary and Post-Secondary Vocational Education Programs." This project was funded through the New Hampshire State Education Department, Division of Vocational-Technical Education under the authority of Section 553 of the Education Professional Development Act, P.L. 90-35. This evaluation covers the operational dates from December 1, 1976, to September 30, 1977. The project was directed by John R. Faust, and was based at Keene State College of the University of New Hampshire.

EVALUATIVE STRATEGY

The process plan for the project provided the major input for evaluation. The process plan provided sufficient detail to assess the project from a "process" and "product" point of view. Process evaluation refers to those things that affect the project outcomes but were not outcomes in themselves whereas product evaluation refers to actual program outcomes.

The process plan was arranged into the following categories for evaluation:

I. Articulation Plan
II. Project Participant Selection
III. Participant Program Status
IV. Workshops and Conferences

Documentation of all activities, interviews, and surveys will provide the data base for this evaluation.

GOALS, OBJECTIVES, AND OUTCOMES

The primary objective of the project was:

> To develop and train selected instructors in a process model for articulation which will assure that instruction given in occupational fields being offered both at the secondary and post-secondary levels in New Hampshire Vocational Education Programs will allow students to move with continuity and without hinderance from one level to the other.

EVALUATION

I. Articulation Plan

Plan for Model Articulation Effort:

The plan for achieving the articulation project goals was set forth in the project's process plan. The sequence, organization, and time base of the plan demonstrated a knowledgeable grasp of activities and procedures that would accomplish the goals of the project. A review of the background leading up to the project indicated that input for the plan came from core of knowledgeable vocational administrators operating at the state level.

Endorsement and Dissemination of Articulation Plan:

On January 5, 1977, the design of the model for articulation was presented to the directors of the post-secondary vocational technical colleges at their monthly meeting. Although no documentary evidence was available as to their formal acceptance or rejection, there is sufficient evidence suggesting that unanimous endorsement was received.

Teachers from five vocational technical colleges had full

support from their vocational directors to participate in the articulation project.

Full support from the secondary vocational directors was not obtained. The project director attempted to get on the agenda at their monthly meetings from February to May, 1977 without success. Endorsements from the vocational directors of the five secondary vocational programs used in the project was, however, obtained.

A presentation was made to the Industrial Education faculty at Keene State College to apprise them of the project. The project was viewed favorably by this group.

II. Project Participant Selection

There was limited control in selecting the project participants. The project, from the onset, was dovetailed with an earlier initiated project on the Alternative Approaches to Individualizing in Vocational Education (AAIVE). The AAIVE Project was composed of exemplary programs in vocational education, reflecting individualized instruction.

Complementary vocational programs at either the secondary or post-secondary level, as the case may be, were then selected to complete the secondary/post-secondary teams for the articulation project. Vocational directors were contacted to obtain their recommendations prior to contacting prospective complementary instructors.

No face-to-face meetings occured until March 24, when a two-day workshop was presented. The circumstances under which the project was initiated prevented a more favorable selection process.

III. Participant Program Status

Procedures for identifying the necessary competencies needed to develop the articulated model were provided in two manners. First, project participants from the AAIVE Project were individually assessed during the fall of 1976, for knowledge of job family clusters, task analysis, and performanced-based instructional objectives. Those who were below the level of expected competency were provided with instruction and resource material by the project director during site visits. Documentation of these activities can be found in the project director's logs. Interviews with project participants also confirms these activities. Second, complementary instructors were surveyed by both telephone and the mail to assess their operational competency in job family clustering, task analysis, and performanced-based instructional objectives. Since these individuals entered the project at a later date than the AAIVE participants, they were not as advanced as their counterparts in the basic elements needed to begin developing the articulated model. Complementary instructors were invited to a workshop scheduled during the latter part of March, 1977, to assist them in developing competencies needed for developing the articulation model.

IV. Workshop and Conferences

A workshop for complementary instructors was held during March, 1977. Another workshop for all articulation teams was held in June, 1977. In addition to these workshops, a conference was held in August, 1977, to validate the articulation effort by members of each team participant's school craft committee.

First Articulation Workshop:

The purpose of this workshop was to provide formal instruction in the necessary skills and knowledges needed to utilize job family clustering, task analysis, and performanced-based instructional objectives in the articulation prpcess. Inspection of the agenda showed adequate time to accomplish the workshop objectives. Data to assess the organization and impact of this workshop is largely drawn from a workshop evaluative questionnaire. The organization and presentation of the workshop received highly favorable ratings from participants.

An instructional package specifically designed for the three major components of the workshop was rated as a useful tool for articulation by four out of the five participants. All components of the instructional package were rated as being clear and concise. All participants rated their skills in developing job family clustering and task analysis favorably. Three out of five participants believed they developed the necessary skills in writing objectives. The remaining two were undecided. A retrospective pretest when compared with a post workshop test concerning the three major instructional components of the workshop reveals that the workshop was very successful in job clustering and task analysis procedures and less successful in writing objectives.

Joint Articulation Workshop:

This workshop brought together the articulation teams for the purpose of articulating their individual programs. The workshop

was held from June 27, to July 1, 1977, at Keene State College. Data to assess the organization and impact of this workshop was drawn from an evaluative questionnaire submitted by the workshop participants, personal interviews with project participants by the evaluator and a workshop critique by Dr. George M. Strout, Acting Director of the New Hampshire Vocational-Technical College at Portsmouth, and Deputy Chief of the State Department of Education Post-Secondary Division.

The organization of the workshop received mixed responses from the participants. Sixty-three percent (5 cases) were supportive of the workshop, 25 percent (2 cases) were undecided and one case non-supportive of the organization of the workshop. Personal interviews indicated that even though all participants were highly favorable of the independent nature of the workshop they still desired a formal structure for the workshop. The evaluator believes this is not a negative critique of the project staff's workshop organizational efforts, but a desire for that formal structure that has prevailed in education.

The presentation of the workshop received highly favorable ratings from the project participants. The overall rating of the workshop ranged from good to excellent by 94 percent of the participants. In addition, Dr. George Strout, who attended a workshop session, wrote a very positive critique of the workshop. Interviews with project participants by the evaluator regarding the workshop confirms the positive evaluation given by the participants and Dr. Strout.

Validation Conference:

The articulated curriculum for each team was presented during

the validation conference to outside advisors selected from the Educational and Business/Industry sector. The goal of the conference was to validate the articulated curriculum. Data for assessing this activity was obtained from post-conference evaluative surveys, interviews, and personal observation at the conference. A review of the agenda and conference materials demonstrated that the conference was planned and organized very well. Of particular importance was the synthesizing of each team's articulated curriculum into packages for reproduction and distribution to the various advisory members and outside observers prior to the conference The quality of the material was judged excellent.

The conference was not evaluated by using precise criteria. as participants had done in previous workshops. For evaluation of the conference, advisory members were asked to respond to three basic questions:

1. The importance of the articulation effort and a critique of the process.
2. The appropriateness of occupational titles and skill base for their field.
3. The appropriateness of both objectives and levels of instruction.

A review of the written evaluative responses indicates that wide support for the articulation effort was received. Collectively, however, only a couple of the evaluations provided data related to questions #2 and #3 noted above.

An examination of the prepared evaluation forms for the advisory panel's use did not have a clear statement for the three questions

for which the project director desired a response. Consequently, it appears that the verbal request for this information was not translated to the written critique. The evaluative critiques received did support many of the premises of the project and should not be negated.

RECOMMENDATIONS & CONCLUSIONS

I. Articulation Plan

Conclusion: The articulation plan contained elements that similar projects across the country recommended as essential. The plan was clear, concise, and workable.

Recommendations:

1. Projects of this scope should have a widespread dissemination among key vocational administrators and instructional staff statewide.
2. More deliberate attempts should be made for initial dissemination.
3. More lead time in planning project activities.

II. Project Participant Selection

Conclusion: The selection procedures employed were commensurate with the way the project was formulated and implemented. It should be noted that the articulation project was conceived and implemented without adequate

Conclusion Continued...

lead time. This factor put a severe limitation on selecting the "ideal" articulation teams.

Recommendations:

1. Future articulation projects should give considerable thought in selecting articulation teams.

2. Secondary and post-secondary program areas should be analyzed to determine if articulation is a reality. An example would be Child Care. Articulation between secondary Child Care Programs and the Keene State College Child Care Program are not compatible.

3. Face-to-face contact of each team member should be made from the onset of the project.

III. Participant Program Status

Conclusions:

The procedures for assessing the status of the project participants in the components of articulation were done very well considering that ideal conditions were not present.

Recommendations:

1. Joint meetings with all articulation team members should be held early. Early face-to-face contact was supported by all project participants.

2. Procedures for providing individualized

Recommendations Continued...

instruction in the components of articulation should be continued.

V. Workshop and Conferences

Conclusion: Workshops and the validation conference were professionally planned, executed and rated to be effective by the participants.

Recommendations:

1. Workshops are an essential ingredient in articulation efforts and should be retained.

2. The use of subject area advisory committee members for critiquing the articulation efforts should be retained and expanded to include several critiquers.

VI. General Recommendations

1. Articulation efforts should receive more support on a continuing basis from the state and local levels.

2. An advisory committee charged with the problem of articulation may be worthy of consideration.

3. The pilot model for articulation must not be "shelved." An active program promoting articulation efforts and the results of the pilot project should be made available to all concerned.

4. The ultimate future of articulation will lie with vocational education decision makers. Active attempts must be made to promote articulation with this sector.

FINAL NOTE

It becomes almost impossible to reflect on all the activities of the project staff in carrying out this project and still keep this evaluation report within acceptable limits.

The evaluator reviewed the Project Director's daily logs and has reached the conclusion that his effort and time in planning a successful attempt to pilot an articulation model was "beyond the call of duty." It should not be forgotten that the articulation model was hastily integrated with the AAIVE Project. Both projects, conducted simultaneously, created a demanding situation for the Project Director.

Interviews with observers of the articulation project concur with the evaluator in making the above statement.

APPENDIX #1

ORIGINAL PROPOSAL FOR ARTICULATION

INTRODUCTION

The State of New Hampshire has offered its high school graduates an opportunity for job entry skill training through the structure of the State's Vocational-Technical Colleges. Now the 20-Center concept has emerged to allow improved opportunity for students ready for vocational training at the high school level. This development presents the simultaneous need for strengthening programs within the secondary school-vocational-technical college curriculum.

A cursory review of program offerings at both levels reveal some duplication of occupational program titles in secondary and post-secondary programs. It is impossible at this time to identify the exact degree of duplication existing beyond the program titles, since both secondary and post-secondary programs lack a total organized written curriculum. Past experience, however, indicates that this duplication might be one reason why students drop-out of school at the post-secondary level. They feel they have previously experienced the program content in which they are currently involved. At the same time, the students at the secondary level become frustrated because they are unaware of the specific skills they need for occupational success. In some cases, the lack of challenge at the secondary level is being questioned by students.

If in fact duplication is taking place, the end results are wasted time, effort and money; none of which we can afford. This in turn also slows the occupational growth of individuals as well as the availability of trained manpower.

Articulation between secondary and post-secondary programs is essential if quality vocational-technical education is to be provided in the State.

The key to an effective articulation effort is in the composition of essential components of an instructional system. Recently the U.S.O.E. has funded a research project titled Alternative Approaches to Individualization in Vocational Education (AAIVE).

Objectives of this project involved selection of six vocational programs having exemplary status and most, if not all of the components of an instructional system developed and operational. Five of these programs are at the secondary level and one is at the post-secondary level. Each participating program either contains or is in the process of establishing a D.O.T. referenced occupational cluster. Each selected occupation in the cluster has been broken down to the task level and instructional objectives related to the tasks that have been written. Considering these six project sites have already developed the essential components of an articulation effort, we feel it is appropriate using this group of instructors and their programs as the nucleus to develop an articulation mini-model.

Objectives:

To develop and train selected instructors in a process model for articulation which will assure that instruction given in occupational fields being offered both at the secondary and post-secondary levels in New Hampshire Vocational Educational programs will allow students to move with continuity and without hinderance from one level to the other.

Participants:

Utilizing the six AAIVE project site teachers, and the programs they represent, we propose to identify complimentary teachers at the post-secondary level and request their participation in the articulation effort.

The following is a listing of schools and programs at secondary and post-secondary levels that will be requested to participate in the articulation process:

Occupational Area	Secondary	Post-Secondary
1. Food Service	*Dover High School	Berlin Voc-Tech College
2. Internal Combustion Engines-Small Engines	*Plymouth Area High School	Laconia Voc-Tech College
3. Electronics	*Nashua High School	Nashua Voc-Tech College
4. Welding	Berlin High School	*Manchester Voc-Tech College
5. Health Occupations	Stevens High School Claremont	Claremont Voc-Tech College
6. Child Care	*Salem High School	Keene State College

* Schools participating in AAIVE Project.

An estimated 18 teachers will participate.

Process Plan	Time Line
1. Project Director will gain endorsement of the Process Plan Voc-Tech and Post-Secondary Division Chief, and Baccalaureate level administrators.	Jan. 1977
2. With the aid of local administrators, identify and select instructors who will work with AAIVE site instructors. (These instructors are referred to as complimentary instructors).	Feb. 1977

Process Plan	Time Level
3. Using an instructional system model, determine the present status of occupational clustering, task analysis, instructional objectives in the complimentary teachers programs.	March 1977
4. Plan and conduct a five day workshop for complimentary instructors establishing cluster concept task listings and instructional objectives.	March 1977
5. Assemble results of workshop and relate materials to AAIVE project teachers materials.	
6. Plan and conduct a five day joint workshop for AAIVE and complimentary instructors to review content documents and articulate a continuum of skill development	June 1977
7. Review results of joint workshop on articulation - organize for validation.	June 1977
8. Identify and contact two or more business and industrial representatives considered to have experience in each of the occupational clusters articulated. Request their attendance at validation conference.	July 1977
9. Conduct one day validation conference.	Aug. 1977
10. Review results of validation conference.	Aug. 1977
11. Plan and conduct a two day follow-up workshop with AAIVE and complimentary instructors to review recommendations of validation conference.	Aug. 1977
12. Instructors submit final articulated curriculum content document.	Sept. 1977
13. Project Director writes final report on articulation process with recommendations for further development.	Sept. 1977

Anticipated Results

1. A workable process model for articulation on which to base a comprehensive state plan.
2. Eighteen or more secondary and post-secondary instructors training in articulation and expected to be used as training resources in a state-wide plan.
3. Provide basis for future full articulation effort.

4. Emphasis on instructional development related to articulation will stimulate state wide concern for curriculum improvement.

Time Extension Request

Due to the dual role of the AAIVE Project Director implicit in this plan, as well as the diverse groups involved, it is impossible to complete the process by June of 1977. We, therefore, request at the outset that the fiscal and programmatic activities of the project be allowed an extension of completion to September 30, 1977.

Administration:

The articulation plan has been integrated into the management plan of the AAIVE Project. Project Director, John Faust, will assume responsibilities for carrying out articulation objectives.

Training costs reflected in the budget only reflect participants activities costs. Personnel costs other than minimal secretarial time are sponsored through a state grant to the AAIVE Project.

Evaluation:

The AAIVE Project has included a third party evaluator in its design. Since articulation will become a component of AAIVE Project activities, the selected third party evaluator will review the process plan and validate results.

Instructors as well as business and industrial leaders participating in the project will be requested to evaluate workshops through a prepared check list and given an opportunity to express their attitudes toward the procedures used.

APPENDIX #2

LIST OF PARTICIPANTS

LIST OF ADVISORY PANEL MEMBERS

ARTICULATION

ROSTER - PROJECT PARTICIPANTS AND CRAFT ADVISORY PANEL

Program	School	Participant	Advisory Persons	Address and Phone Number
Child Care	Salem High School	Nancy Chase Lori Leone	Ms. Nancy Cobban	Director, 4C's Day Care Center Salem, NH 893-0502 (?)
Child Care	Keene State College	Susan M. Barber	Suzanne Federer	C.P.A. Consultant U.N.H. DURHAM, NH
Culinary Arts	Dover High School	Doug Coons	Mr. Bill Hartford	Fernald Hackett's Restaurant 1 So. Main Street Rochester, NH 03867
Health Occupations	Stevens High School Claremont	Judy Maculievicz	Ms. Thelma Hause	Home Economics Dept. Chairman Lake Avenue, Sunapee, NH
			Judy Fillion	Health Consultant N.H. State Dept. of Education
Culinary Arts	NHVTC - Berlin	Peter Lewis	Mr. Earl Cook Dir. Food Service	Concord Hospital Concord, NH
Power Mechanics	Plymouth High School	Tim Peters	Mr. Denny Beckley	Deming Chevrolet, Holderness Rd. Plymouth, NH 03264
Power Mechanics	NHVTC - Laconia	Ron Kozikowski	Mr. Max Perkins Service Manager	Irwin Motors, Inc. Bisson Ave., Laconia, NH

(continued)

ARTICULATION

ROSTER - PROJECT PARTICIPANTS AND CRAFT ADVISORY PANEL

Program	School	Participant	Advisory Persons	Address and Phone Number
Electronics	Nashua High School	Bob Reynolds	Mr. George Day Training Dept. Mr. Richard Bush	Centronics Data Computer Corp. Hudson, NH 883-0111 MITRE Corporation Bedford, Mass.
Electronics	NHVTC - Nashua	Frank Wang	Mr. Robert Farrell Educ. Prog. Coord.	Digital Equipment Corp. 146 Main St., ML ⅓ E 30 Maynard, Mass. 01754
Welding	Berlin High	Ed Langlois	Robert Dumont School Board Member	Instructor - NHVTC - Berlin 456 Madison Avenue Berlin, NH 752-6053
Welding	NHVTC Manchester	Mel Ciulla	Ed Souza	37 Gertrude Avenue Lowell, MASS 617-458-1673

APPENDIX #3

SAMPLE SKILL CHART

Instruction Sheet #9

SKILL-OCCUPATION CHART

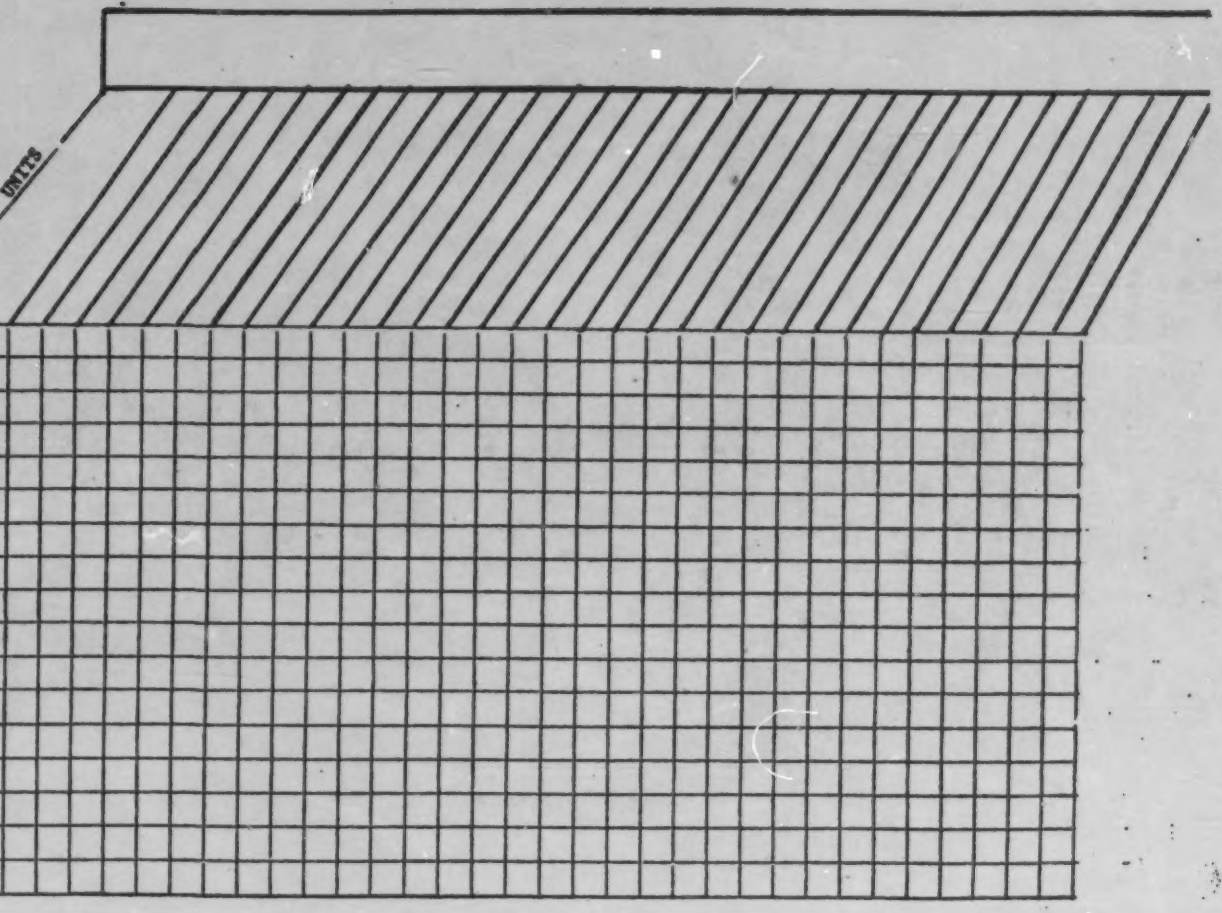
Prepared by: _____

School: _____

Required - R
Optional - O

PROGRAM: _____

OCCUPATIONS	D.O.T. No.	UNITS



APPENDIX #4

INSTRUCTIONAL LEARNING PACKAGE
FOR ARTICULATION

JOB FAMILY CLUSTERING

Assuming that need assessment relating to jobs, student characteristics and institution capability has been accomplished, we need to determine the range of training feasible in the instruction program.

The steps in the process are as follows:

1. Select the job family.
   Examples: Auto services, electronics, health occupations, etc.

2. Using the following manuals, list all occupations in the job family that the instruction program would consider:

   A. Dictionary of Occupational Titles
   B. Occupational Handbook
   C. Vocational Education and Occupations

   (Instruction Sheet #1)

3. Divide the listed occupations into three categories: Low, Middle, and Upper, job entry levels.

   Use D.O.T. numbers for each occupation.

   (Instruction Sheet #2)

4. Analyze the complete list of occupations in each category. Pick 3-5 (this will vary) that best relate to:

   A. Regional employment needs.
   B. Student interest and aptitude
   C. Institutional training facilities

   Circle these occupations on Instruction Sheet #2.

5. Place the selected occupations in a list, with the lowest skilled entry title at the top and highest at the bottom.

Now you are ready for Task Description.

Job Family _____ School _____ Instructor _____

Objective:

Using the D.O.T., Occupational Outlook Handbook, Vocational Education and Occupations list all the occupational titles that could be considered in your program.

D.O.T. NUMBER	OCCUPATIONAL TITLE	D.O.T. NUMBER	OCCUPATIONAL TITLE	D.O.T. NUMBER	OCCUPATIONAL TITLE

Job Family _____ School _____ Instructor _____

Objective:

Divide the occupations listed on Instruction Sheet #1 by 3 levels of entry skills required.

LEVEL 1	D.O.T. #	LEVEL 2	D.O.T. #	LEVEL 3	D.O.T. #
Occupations					
1.		1.		1.	
2.		2.		2.	
3.		3.		3.	
4.		4.		4.	
5.		5.		5.	
6.		6.		6.	
7.		7.		7.	
8.		8.		8.	
9.		9.		9.	
10.		10.		10.	

TASK DESCRIPTIONS

Task descriptions are the source of all instructional objectives and provide instructions, with curriculum development input, that:

A. Suggest sequencing and form of training.

B. Serve as statements of performance from which an instructional objective can be formulated.

The task description should be written with enough detail to provide minimal step by step direction and guidance.

The elements in a task description can be categorized as duties, tasks, activities and actions.

Duties - Major sub-divisions that have distinct identities within the overall job. A duty of an auto mechanic, for example, is an engine tune-up. Duties are composed of several distinct tasks.

Tasks - Necessary to performance of duties; a series of activities with a common purpose that occur in close sequence. An engine tune-up involves such tasks as replacing points, setting timing, etc.

Activities - Necessary to performance of tasks; a series of actions with a common purpose that occur in close sequence. Adjusting the dwell involves such activities as loosening the lock nut with a wrench, attaching a dwell meter, etc.

Actions - Necessary to performance of activities; short, simple operations that are frequently common to many activities; involves using tools, devices, simple test equipment, etc.

There are three stages to task description:

A. Describe duties that fall under the occupation.

B. Outline tasks that fall under duties.

C. Determine what necessary activities make up tasks.

Now that we have described task description, let's tie its use into the job family clustering completed earlier.

1. Using Instruction Sheet #3, select the level 3 occupation that you consider to be the most complex in duties and tasks.

2. Make a list of duties and tasks on Instruction Sheet #4 associated with the selected occupation

3. Take another close look at your job family cluster.

   Does the occupation you have selected include all of the tasks for the low, middle, and other high entry occupations written on Instruction Sheet #2?

   If "Yes" you should go on to Step 4.

   If "No" you will have to list the additional unique tasks for each occupation on a separate Instruction Sheet #4.

4. Group the tasks and/or duties in the sequence you will present them to students in the classroom. (Create instruction units or modules) (Instruction Sheet #5)

   Let's review what you have accomplished to this point.

   You have clarified job titles from low entry to high entry levels for which your program will train people. You also have identified the tasks and duties associated with each occupation.

   Every activity you have accomplished to this point relates to Occupational Analysis. But you are an educator! This is where your expertise as an educator is needed. We now must apply what we know about occupations into an organized instruction effort. Step #1 is translating duties and tasks into instructional objectives.

We are now ready to create Instructional Objectives.

Instruction Sheet #3

Job Family _____ School _____ Instructor _____

Objective:

Place circled occupations from Instruction Sheet #2 in low to high entry level order.

D.O.T. NUMBER	OCCUPATIONAL TITLE

Job Family _____

Occupation Title _____

D.O.T. _____

DUTIES	TASKS

TASKS & DUTIES SEQUENCED
FOR CLASSROOM INSTRUCTION

CREATING OBJECTIVES

Let's talk Terminology first:

INSTRUCTIONAL OBJECTIVE:

General term used to describe any measurable achievement pertaining to teacher or student actions in the educational experience.

BEHAVIORAL OBJECTIVE:

Usually related to what a student will be able to do as a result of the learning experience.

PERFORMANCE OBJECTIVE:

Used interchangeably with behavioral objective. Vocational educators have preferred this term to describe minimum competency standards required of students.

TERMINAL OBJECTIVE:

A final result of specific learning by a student...the overall minimum competency that must be achieved by the student in order to be accepted by the instructor or, more importantly, the employer as interpreted by the instructor.

INTERIM OBJECTIVE

A stated measurement by the instructor to measure learning progress ...something less than terminal performance...used to evaluate.

Since we are dealing with vocational programs we will use the term performance objective.

Performance objectives are usually:

1. Composed from the task list.
2. Organized according to instructional sequence.

Two popular methods of writing performance objectives are the Mager Method and the ABCD Method, described on the following page.

(You may already have your own method; use it if you are uncomfortable with these.)

AUTO MECHANICS - UNIT ON EXHAUST SYSTEM

MAGER METHOD

Terminal Behavior	- Inspect, list parts needed, order and install any new parts.
Conditions	- Given an automobile with a defective muffler system, and instruction.
Criterion	- 100% no leaks according to manufacturer's specifications.

ABCD METHOD

Audience	- Each student.
Behavior	- Will inspect, list parts needed, order, and install any new parts.
Conditions	- Given an automobile with a defective muffler system, and instruction.
Degree	- 100% no leaks according to manufacturer's specifications.

TERMINAL OBJECTIVE (END RESULT OF UNIT)

Given an automobile and instruction, each student will inspect, list parts needed, order, and install any new parts in vehicle exhaust system with 100% no leaks according to manufacturer specifications.

INTERIM OBJECTIVES (WAYS TEACHER MEASURES STUDENTS DURING UNIT)

STUDENT CAN:

1. Identify parts by proper terminology
2. Safely place a vehicle on hoist
3. Determine parts needed and order
4. Install new parts
5. Test system to instructor's standards

If this is still confusing, review the attached information sheet titled, "What About Behavioral Objectives."

You should now be ready to create Instructional Objectives.

WHAT ABOUT BEHAVIORAL OBJECTIVES

"IF YOU'RE NOT SURE WHERE YOU'RE GOING,
YOU'RE LIABLE TO END UP SOMEPLACE ELSE
AND NOT EVEN KNOW IT."

DEFINITIONS

1. BEHAVIORAL OBJECTIVE - A statement based on a systematic approach to education which includes descriptive phrases about: 1) terminal behavior, 2) conditions and 3) criterion. These statements will lead to the development of educational programs which place emphasis upon what the learner learns. In this approach, the teacher decides what behavior he wants the student to acquire, then decides upon the best way to get the student to acquire it. Knowing what you want before you go shopping makes much more sense than going shopping to see what you can get.

   A. TERMINAL BEHAVIOR - refers to the behavior a teacher and school would like its students to be able to demonstrate at the end of a learning experience. It identifies and names the "observable act" which will be accepted as evidence that the learner has achieved the objective.

   B. CONDITIONS -------- refers to the situation under which a student's terminal behavior will be evaluated. Describes materials and contents the teacher will provide, or the restrictions the teacher will impose, to exclude acts that will not be accepted as evidence that the learner has achieved the objective. It describes what the learner will be provided or denied when he is demonstrating that he has achieved the proper terminal behavior.

C. CRITERION -------- refers to a standard or test by which a "terminal behavior" is evaluated. It specifies how well the student must perform when demonstrating his terminal behavior or how much of the terminal behavior he must display to demonstrate what he has learned. This specification may be in terms of the number of correct responses, new approaches developed within a given time period, student's performance relative to others, lower limit of acceptable performances, the number of principles, techniques, approaches, or alternatives which must be applied, identified, or developed or an acceptable deviation from standard.

II. Categories of Objectives

A. Cognitive - Objectives concerned with knowledge or information and intellectual abilities:

Examples: Naming
Listing
Solving

B. Motor - Skills requiring the use and coordination of selected muscles:

Examples : Performing
Manipulating
Constructing

C. Affective - Considers behavior relating to feeling and emotions expressed as attitudes and appreciations:

Examples: Enjoying
Respecting
Conserving

ALL Learning objectives can be developed within one of these categories.

III. Writing Behavioral Objectives

A behavioral objective is a statement communicating a teacher's intentions by denoting behavior which a student must demonstrate when he has successfully completed a learning experience. The statement should have sufficient detail so that others will interpret the statement the same way the author interprets it.

The chief purposes for stating an objective are to: 1) Communicate the author's intentions in unambiguous terms, and 2) to allow the total curriculum to be critically examined. The use of behavioral terminology is a means of achieving this end.

IV Construction of a Performance Objective (Mager)

First, identify the Terminal Behavior by name; you can specify the kind of behavior that will be accepted as evidence that the learner has achieved the objective. What is the learner Doing when he is demonstrating that he has achieved the objective?

Example: Write a summary
Repair a Radio

Second, Try to define the desired behavior by describing the important conditions (givens, restrictions, or both) under which the learner will demonstrate his competence. What will the learner be provided or denied?

Example: Without the Aid of References
Given a standard set of Tools.

Third, Specify the criterion of acceptable performance by describing how well the learner must peform to be considered acceptable. This may be by:

1. Time Limits
2. Minimum number of acceptable correct responses.

Example: Within a period of 30 minutes
with 80% accuracy.

V. Examples of Performance Objectives

1. Conditions: Given a topic in his vocational area

   Terminal Behavior: The pupil will demonstrate the 4 step teaching method.
   Criterion: In a 30 minute presentation.

2. Conditions: Given a D. C. motor of 10 horsepower or less that contains a single, unidentified malfunction, and given a standard set of tools and references.

   Terminal Behavior: The learner must be able to repair the motor.
   Criterion: Within a period of 45 minutes.

3. Conditions: Given access to lumber, tools and plan.

   Terminal Behavior: The pupil will construct an acceptable 3'x4' doghouse.
   Criterion: In four hours.

4. Conditions: Given the necessary tools, materials, specifications

   Terminal Behavior: The pupil will mix mortar, bed & lay up brick, and finish joints to build a 3'x6' wall.
   Criterion: In a period not to exceed 1 1/2 hours.

5. Conditions: Upon completion of the 5 day workshop on Career Education the participant will be able to:

   Terminal Behavior: A) Describe the difference between career education and vocational education.
   Criterion: In a 5 - 10 minute panel discussion

   Terminal Behavior: B) List and describe 10 activities appropriate to his subject matter area.
   Criterion: In a paper of not less than 200 words.

SOME ACTION VERBS DESIRABLE FOR WRITING LEARNING OBJECTIVES:

APPLY	LIST
ARRANGE	MAKE
BUILD	NAME
COMPARE	ORDER
CONTRAST	RECALL
DEFINE	REPEAT
DEMONSTRATE	SHOW
DISTINGUISH	SOLVE
DUPLICATE	STATE
EXPLAIN	TELL
IDENTIFY	WRITE
REPAIR	SELECT
ADJUST	DESCRIBE
CONSTRUCT	ASSEMBLE
	ORGANIZE

SOME ACTION VERBS RELATED PARTICULARLY TO THE A F F E C T I V E AREA:

ACCEPTS	OFFERS
ATTEMPTS	PRAISES
CHALLENGES	QUESTIONS
DEFENDS	SHARES
DISPUTES	SUPPORTS
JOINS	VISITS
JUDGE'S	VOLUNTEERS

TO MEASURE POSITIVE ATTITUDE TOWARD AN ACTIVITY USE SUCH INDICATORS AS:

-- THE STUDENT SAYS HE LIKES THE ACTIVITY.

-- THE STUDENT SELECTS THE ACTIVITY IN PLACE OF OTHER POSSIBLE ACTIVITIES.

-- THE STUDENT PARTICIPATES WITH A HIGH DEGREE OF ENTHUSIASM.

SOME LOADED WORDS OPEN TO A WIDE RANGE OF INTERPRETATION AND UNDESIRABLE FOR WRITING LEARNING OBJECTIVES:

TO KNOW
TO REALLY UNDERSTAND
TO APPRECIATE
TO FULLY APPRECIATE
TO GRASP THE SIGNIFICANCE OF
TO ENJOY
TO BELIEVE
TO HAVE FAITH IN

STEPS IN OBJECTIVE WRITING

1. Translate each statement on Instruction Sheet #5 (Duties and Tasks List) into a Mager or ABCD type objective; or your own style. Use Instruction Sheet #6.

   After these are written, in the right hand column identify which of the instructional unit titles will be most appropriate to carrying out the objective.

   Example:

   Instruction Unit - Ignition System

   Task - Changing Spark Plugs

2. (See Terminology sheet again.) Ask youself if the objectives you have created are interim or terminal.

   Having identified the Instructional Unit titles and determination of interim and terminal objectives, rewrite each objective on the appropriate sheet: Instruction Sheet #7 for terminal objectives; Instruction Sheet #8 for interim objectives.

   Your final objective requirements for instructional purposes may only be terminal. However, the interim objectives may also be useful as you and your counterpart discuss curriculum.

3. Using Instruction Sheet #9, fill in the occupations and DOT number columns with the appropriate information taken from Instruction Sheet #3.

   Under the Units column, write the title of your Instructional Units.

   For each occupation, determine with a cross reference whether each skill is required (R) or optional (O).

NOW YOU ARE READY FOR

ARTICULATION!

CREATING OBJECTIVES

Instructor _____

Program _____

TASK STATEMENT NUMBER (From Sheet #5)	PERFORMANCE OBJECTIVE MAGER ABCD OTHER	INSTRUCTIONAL UNIT

CREATING OBJECTIVES

Instructor _____

Program _____

INSTRUCTIONAL UNIT TITLE	TERMINAL PERFORMANCE OBJECTIVE

CREATING OBJECTIVES

Instructor _____

Program _____

INSTRUCTIONAL UNIT TITLE	INTERIM PERFORMANCE OBJECTIVE

APPENDIX #5

SAMPLE CURRICULUM ARTICULATION

OBJECTIVE SHEET

CURRICULUM ARTICULATION

CLUSTER _____

UNIT OR SKILL TITLE	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Secondary

APPENDIX #6

SAMPLE OF COMPLETED ARTICULATION
MATERIALS SENT TO ADVISORY PANELISTS

ARTICULATION: WHAT IT IS

AND WHY NEW HAMPSHIRE NEEDS IT

New Hampshire has offered its high school graduates an opportunity for job entry skill training through the structure of the seven state vocational-technical colleges. Now, the twenty center concept has emerged to allow those students who are ready at the high school level an improved opportunity for vocational training.

The potential for skill training at both levels can allow for extensive numbers of students to be trained in a wider range of occupational skill titles than ever before. This opportunity is concurrent with a need to assure both state citizenry and the students attending our vocational centers that access to an educational program which provides continuity between levels of study exists in an effective, planned strategy. This strategy is commonly referred to as articulation.

A well-articulated program will allow a student to complete occupational training more quickly and at less cost because the potential repetition of learning is removed. Articulation between educational levels involves several components: there can and should be on-going communication between the administrators at differing educational levels; jointly agreed to recruiting and admission polocies; uniform guidance and counseling procedures and consistency of information available to students at various levels of their education.

We believe the most critical type of articulation is centered in the curriculum; and therefore, the first effort at articulation has been concentrated on having secondary and post-secondary skill area instructors meet to discuss curriculum content. This, itself, is difficult to accomplish because as yet, no inform format for curriculum content is used by instructors at either level.

During the winter of 1976-77, instructors at the secondary and post-secondary levels in six occupational training areas were identified and asked to participate in a model articulation program. To begin articulation, we felt it necessary to identify and describe in a uniform, written approach, the curriculum content of selected skill area programs at the secondary and post-secondary levels. Three instructional components were determined to be necessary as prerequisites to articulation:

1. a series of job titles sharing the same skill base (referred to as the "job family cluster");
2. an analysis of tasks associated with one or more of the job titles; and
3. measurable instructional objectives used to conduct training in the job skills.

An instructional package describing how to create these three components was developed by project staff. Participating instructors not familiar with all three components were brought together for a workshop in March of this year. By July 1, all participants had completed the description of their programs using the three components and a uniform format.

Once these components were well-defined, participating instructors were able to identify the sequence of skills required to train entry level workers. In addition, instructors were new able to determine the appropriateness of instruction at their respective levels.

In June, participants from both levels met in a one-week articulation workshop at Keene State College.

Results of articulation show that some low level entry jobs are trained for exclusively at the secondary level; and that some high level jobs are trained for exclusively at the post-secondary level. A third group, which we call "articulated", may be taught at either level - with the only variable being the depth and emphasis of training reflected by the instructional objectives.

The results of this articulation workshop are now being assembled. The value of the articulation effort can best be determined, we believe, by a representative advisory panel's review of the results achieved. The panel, composed of one or more members from each occupational field will be asked to review the articulation process and resulting materials. Each of the origional participants were asked to submit one or more names for inclusion in the panel. Each panel member will be requested to write a brief statement of the effectiveness of the articulation process and product.

If the opinions of the panel members are favorable, a final report to the chiefs of the State Department of Education Vocational-Technical and Post-Secondary Divisions indicating this feeling will be written and submitted.

If concern over results is indicated by the panel member(s), participant instructors will be requested to review the panel's concerns and make appropriate changes to the materials prior to the writting and submission of the final report.

This project has been made possible through the cooperation of the State Department of Education of New Hampshire and is based at Keene State College, Keene, New Hampshire.

THE ARTICULATION OF SECONDARY AND POST-SECONDARY VOCATIONAL EDUCATION PROGRAMS

VOCATIONAL SKILL AREA: CULINARY ARTS

PARTICIPANTS: DOUGLAS A. COONS, DOVER HIGH SCHOOL, DOVER, N.H.

PETER C. LEWIS, NEW HAMPSHIRE VOCATIONAL TECHNICAL COLLEGE, BERLIN, N.H.

WORKSHOP DATES: JUNE 27, 1977 - JULY 1, 1977
KEENE STATE COLLEGE, KEENE, N.H.

Activities supported by the N.H. State Department of Education, Vocational-Technical Division under the authority of Section 553 of the Education Professions Development Act.

EXPLANATION OF ZONES

We have taken unit or skill titles and have divided them into five distinct zones for the purpose of identifying articulated skills on the secondary and post-secondary levels.

Zone One on both secondary and post-secondary levels concerns itself with general/personal hygiene and sanitation before handling foods; individual and classroom safety and skills necessary for being able to interpret and produce recipes.

Zone Two on the secondary and post-secondary levels is concerned with obtaining necessary food ingredients in desired quantities and quality; being able to recognize and use storage procedures and being accountable for costs in terms of ingredients/product costs and menu pricing.

Zone Three is concerned with methodologies and skills of food preparation, recognizing marketable food products according to classification and recognizing problem areas in each classification and being able to employ remedial techniques to resolve the problems.

Zone Four is concerned with food cost and cost accountability; personnel coordination and management and food interpretation.

Zone Five is concerned with techniques of management associated with the food service industry and with the managerial controls necessary in food service.

EXPLANATION OF PLACEMENT OF TERMINAL OBJECTIVES

With the exception of Zone Two (Unit Costing, Cost Computation and Menu Pricing) and Zone Three (Food Preparation), all terminal objectives for secondary and post-secondary levels appear at the heading. In the other two instances, they appear at the conclusion of the curriculum articulation form to identify depth and emphasis differences between the secondary and post-secondary levels.

EXPLANATION OF DEPTH AND EMPHASIS

Articulation concentrates on four of the five zones on the articulation graph:

1. Both of us feel Zone One is essential on the secondary and post-secondary levels because of the necessity of maintaining high standards in personal and general hygiene before handling foods; the safety of the individual and classroom; and the skills necessary to be able to interpret and produce recipes.

2. In Zone Two, the degrees of emphasis begin to indicate a variance of depth, in that both the secondary and post-secondary levels concentrate on obtaining necessary food ingredients in desired quantities and quality, and in being able to recognize and use storage procedures. On the post-secondary level, however, a considerable degree of emphasis is placed upon being accountable for costs in terms of ingredient/product costs and menu pricing.

3. In Zone Three, both the secondary and post-secondary levels emphasize the methodologies and skills of food preparation and in being able to recognize a marketable food product. The depth, however, on the post-secondary level also encompasses the recognition of problem areas in each classification of food preparation and in being able to employ remedial techniques to resolve these problems. The post-secondary level also emphasizes specialization within each of these areas of food preparation.

4. In Zones Four and Five, the variation in terms of emphasis and depth become apparent in that the secondary level concentrates primarily on menu terminologies and planning, while the post-secondary level concerns itself with not only the skills associated with the menu, but also food cost accounting, personnel coordination and food service management techniques and controls.

NON-AGREEMENT STATEMENT

For the purposes of this Articulation Workshop, there were no differences of opinion on the part of either participant. In both cases, a greater degree of awareness as to what occurs on the secondary and post-secondary levels developed. It should be understood that in terms of degree of emphasis and depth, there are differences; but in terms of philosophical concepts about food service education, there were no disagreements.

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec.
Personal Hygiene and Sanitation	Each student, in working on the job, should be aware of the importance of sanitation, its meaning and the most effective method of assuring the meeting of requirements of the Board of Health in personal practices and appearance.	T	S-PS
	Each student must demonstrate proper personal hygiene rules by wearing clean white uniforms in the labs and keeping a clean appearance and body.	I	S-PS
	Given 9 questions from a safety rule sheet passed out in class, each student must complete a worksheet on safety rules of personal hygiene with 80% or better accuracy.	I	S-PS
	Each student must demonstrate proper personal grooming rules by dress and personal appearance in production labs and by keeping hair covered.	I	S-PS
	Each student must read and complete a personal grooming checklist provided in class covering six areas of personal grooming.	I	S-PS
	The student should be able to define the term "sanitation" and identify all the causes of food poisoning/illnesses, to the instructor's satisfaction.	I	S-PS
	Given a kitchen, the student would be able to recognize the importance of and plan a cleaning program for the job, to the instructor's satisfaction.	I	S-PS
	The student should recognize the importance of on the job training and develop the methods necessary to maintain good sanitation in accordance with the rules of sanitation.	I	S-PS
	Each student must observe and use kitchen sanitation rules which have been provided on a sheet handed out in class, while working in production labs.	I	S-PS
	Each student must observe and use all proper washing techniques while working in production labs.	I	S-PS

cont'd.

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec.
Personal Hygiene and Sanitation (cont'd.)	Each student will complete, written or orally, the three main steps of washing, on paper or to the instructor, describing each step completely, with 100% accuracy.	I	S-PS
	Each student will observe and use all sanitation rules pertaining to all areas of commercial kitchens, while working in production labs.	I	S-PS
Shop Safety	Each student, when confronted with a kitchen which can be potentially hazardous, must recognize the most hazardous areas and maintain and practice a safe, hazard-free kitchen to the instructor's standards.	T	S-PS
	The student must know and use safety in food preparation when working with food preparing recipes in production labs, according to rules covered in class.	I	S-PS
	The student must know and use safety with hand equipment when working with hand equipment preparing recipes in production labs, according to rules covered in class.	I	S-PS
	The student must know and use safety with stationary equipment when working with stationary equipment preparing recipes in production labs, according to rules covered in class.	I	S-PS
	The student must know and use safety with clothing when working in production labs, according to rules covered in class.	I	S-PS
	The student must know and use safety with floors when working in production labs, according to rules covered in class.	I	S-PS

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec.
Shop Safety (cont'd.)	Each student will provide on-the-job training/seminars on safety, sanitation and fire prevention by utilizing movies, speakers and signs to help employees become aware of the shop safety issues. In addition, students will be able to identify hazardous areas by localizing with signs and/or different colors on floors, walls, etc. The student will also be able to provide demonstrations on hazardous and correct methods of practicing good safety sanitation and fire prevention.	I	PS
	Each student will be able to demonstrate how to encourage employee practice by using a reward and/or merit system.	I	PS
	Each student will be able to demonstrate how to periodically reinforce the prinicples covered in seminars, movies or demonstrations.	I	PS
Equipment Safety	The student will use proper safety techniques when using both large and small equipment in production labs. This will be done according to the shop safety procedures and to the satisfaction of the instructor.	T	S
	Given a ditchen, the student whold be able to instruct others in the importance of sanitation/safety/fire prevention with equipment; the means by which hazardous areas are recognized and also be able to develop a follow through program of safe practices to assure a safe kitchen.	T	PS
	Each student, using implements and necessary food and material, after a demonstration by the instructor, will be able to demonstrate proper use of basic cutting implements to the satisfaction of the instructor.	I	S-PS
	Each student, using necessary implements and materials, after demonstration by the instructor, will be able to demonstrate proper sharpening and maintenance of cutting implements to the satisfaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec
Equipment Safety (cont'd.)	Each student, using implements and storage areas required, will demonstrate proper and safe storage of cutting implements to the satisfaction of the instructor.	I	S-PS
	Each student, using implements in production labs, after demonstration by the instructor, will show proper use of food handling implements.	I	S-PS
	Each student, using implements in production labs, after demonstration by the instructor, will demonstrate proper use of food preparation implements, to the satisfaction of the instructor.	I	S-PS
	Each student, using utensils in production labs and after demonstration by the instructor, will demonstrate proper use of cooking utensils, to the satisfaction of the instructor.	I	S-PS
	Each student, using baking implements in production labs after demonstration by the instructor, will demonstrate proper use of baking implements, to the satisfaction of the instructor.	I	S-PS
	Each student, using fryer in production labs, after demonstration by the instructor, will demonstrate proper and safe usage of the deep fryer, to the satisfaction of the instructor.	I	S-PS
	Each student, using mixers in production labs after demonstration by the instructor, will demonstrate proper and safe use of mixing machines, to the satisfaction of the instructor.	I	S-PS
	Each student, using a slicer in production labs, after demonstration by the instructor, will demonstrate the proper and safe usage of the slicer, to the satsifaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec.
Equipment Safety (cont'd.)	Each student will, using convection oven in production labs, after demonstration by the instructor, will demonstrate proper and safe use of convection oven to the satisfaction of the instructor.	I	S-PS
	Each student, using microwave oven in production labs, after demonstration by the instructor, will be able to demonstrate proper and safe use of microwave ovens, to the satisfaction of the instructor.	I	S-PS
	Each student, using a range in production labs, after demonstration by the instructor, will be able to demonstrate proper and safe use of ranges, to the satisfaction of the instructor.	I	S-PS
	Each student, using a broiler in production labs, after demonstration by the instructor, will be able to demonstrate proper and safe use of broilers, to the satisfaction of the instructor.	I	S-PS
	Each student, using roasting ovens in production labs, after demonstration by the instructor, will be able to demonstrate the proper and safe usage of roasting ovens, to the satisfaction of the instructor.	I	S-PS
	Each student, using proof box in production labs, after demonstration by the instructor, will demonstrate proper and safe usage of proof boxes, to the satisfaction of the instructor.	I	S-PS
	Each student, using dishwasher in production labs, after demonstration by the instructor, will demonstrate proper and safe use of dishwashers, to the satisfaction of the instructor.	I	S-PS
	Each student, using the grill in production labs, after a demonstration by the instructor, will demonstrate proper and safe usage of grills, to the satisfaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec.
Measurements	The student will measure food materials for lab production using volume measures, scales or scoops. This will be done according to instruction on standard recipes.	T	S-PS
	Each student, using standard scoops to measure ingredients for recipes in production labs, will be able to identify and use standard scoops for measuring, accurately, according to recipe quantities needed.	I	S-PS
	Using standard cups to measure ingredients for recipes in production labs, each student will identify and use standard cups for measuring, accurately, according to recipe quantities needed.	I	S-PS
	Using scales to weigh ingredients for recipes in production labs, each student will identify and use scales for weighing, accurately, according to recipe quantities needed.	I	S-PS
	Using pounds and ounces to weigh ingredients for recipes in production labs, each student will identify and use pound weights and ounce weights accurately, according to recipe quantities needed.	I	S-PS
	Using volume measure to measure ingredients for recipes in production labs, each student will identify and use volume measures accurately, according to recipe quantities needed.	I	S-PS
	The student should be able to convert standard measurements to metric and imperial measurement standards with 100% accuracy.	I	PS
	Given a production sheet with predictions, the student will be able to record clearly, by departments, the required quantities of each menu item to be prepared.	I	PS
	Each student, when given a food requirement problem, will be able to compute food requirements, methods for ordering, methods for ordering the best food products at the best price in accordance with the menu.	I	PS

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec.
Using and Converting Recipes	Each student, when given a production sheet problem, will be able to determine and assign quantities for each menu item to be prepared for a given day with necessary conversions on recipes to assure accuracy in taste, color, texture, and flavor of food dishes.	T	S-PS
	Each student will recite orally or write on paper the food and material necessary for the preparation of a recipe for Chocolate Chip cookies, with 90% or better accuracy.	I	S
	Using the necessary food and material(s), each student will prepare one recipe of Chocolate Chip cookies, according to the Food Trades Quality Standards and to the satisfaction of the instructor.	I	S
	Each student will recite orally or write on paper, the figures necessary for preparing a one-half recipe of Chocolate Chip cookies with 90% or better accuracy.	I	S
	Given a scrambled recipe, each student will write it in standard form on a 3 x 5 index card, including the food necessary, measurements, steps in order, time required and quantity served, with 100% accuracy.	I	S
	Students should be able to take the recipe conversion formulae and in a series of assigned problems, convert those recipes, increasing and decreasing quantities as indicated in the problem, with 100% accuracy.	I	PS
Identifying and Using Ingredient	The student will identify and use food ingredients for preparing standard recipes in lab production. This will be done according to the Food Trades Quality Standards and to the satisfaction of the instructor.	T	S
	The student will be able to identify food ingredients, their composition, usage and restrictions in the preparation of all food/baked item found in food service.	T	PS

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec.
Identifying and Using Ingredients (cont'd.)	Using vegetables for recipes in production lab, each student will identify and use vegetables according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using vegetable products for recipes in production labs, each student will identify and use vegetable products, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using meats for recipes in production labs, each student will identify and use meats, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using meat products for recipes in production labs, each student will identify and use meat products according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using venegars for recipes in production labs, each student will identify and use various types of vinegars, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using dressings for recipes in production labs, each student will identify and use various types of dressings, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using seasonings for recipes in production labs, each studnet will identify and use various types of seasonings, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using various types of milk for recipes in production labs, each student will identify and use types of milk, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE ZONE I	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec.
Identifying and Using Ingredients (cont'd.)	Using milk products for recipes in production labs, each student will identify and use milk products, according to Food Trades Quality Standards and to the satisfaction for the instructor.	I	S-PS
	Using sugars in recipes in production labs, each student will identify and use sugars, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using sweetening agents for recipes in production labs, each student will identify and use sweetening agents, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using baking ingredients for recipes in production labs, each student will identify and use baking ingredients, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using various types of flours for recipes in production labs, each student will identify and use various types of flours, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using thickening agents for recipes in production labs, each student will identify and use thickening agents, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using seafood for recipes in production labs, each student will identify and use seafood, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using seafood products in production labs, each student will identify and use seafood products according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = PostSec.
ZONE I			
Identifying and Using Ingredients (cont'd.)	Using eggs for recipes in production labs, each student will identif and use eggs according to Food Trades Quality Standards and to the satisfaction of th instructor.	I	S-PS
	Using egg products for recipes in production labs, each student will identify and use egg products according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using convenience foods in production labs, each student will identify and use convenience foods in accordance with Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
	Using fruits for recipes in production labs, each student will identify and use fruits, according to Food Trades Quality Standards and to the satisfactio of the instructor.	I	S-PS
	Using fruit products for recipes in production labs, each student will identify and use fruit products, according to Food Trades Quality Standards and to the satisfaction of the instructor.	I	S-PS
ZONE II			
Unit Costing, Cost Computation and Menu Pricing	Using basic math techniques, the student will compute recipe costs. This will be accomplished by using standard recipes and present market prices.	T	S-PS
	Each student will recite orally or write on paper the amounts of ingredients and the cost figures necessary for costing a recipe of Chocolate Chip cookies using present market prices, with 100% accuracy.	I	S-PS
	Each student will write on paper the computations necessary for costing a recipe of Chocolate Chip cookies using present market prices, within 2¢ (two cents) of the correct price.	I	S-PS

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UNIT OR SKILL TITLE ZONE II	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post Sec.
Unit Costing, Cost Computation and Menu Pricing (cont'd.)	The student should be able to take basic cost computation techniques and develop a menu selling price using one of seven food cost/pricing techniques, depending upon the type of food service operation.	I/T	PS
Requisitioning	The student will prepare a food list for the instructor that will show the amount and type of food necessary for production lab. The instructor will be responsible for ordering requested food items for student needs in production labs.	T	S
	The student, when assigned to the chef's position for a given laboratory/production exercise, will be held responsible for ordering of all food supplies required for menu production by all other student with assigned tasks in food preparation, with 100% accuracy.	T	PS
	Each student will prepare the quantity required of each item on the requisition sheet with regard to quantity and item description (quality and item specifications.)	I	S-PS
	Given a menu and a menu sales analysis form, the student should be able to prepare requisition sheets with quantities, qualities and specifications necessary to satisfy the menu's requirements.	I	PS
Storage Procedures	The student will be able to recognize the importance and necessity of food storage procedures and will demonstrate to the instructor's satisfaction, in written and practical exercises, the ability to develop, implement and evaluate the necessary procedures required to assure the maximum security of food products.	T	S-PS
	The student will demonstrate the peoper receiving techniques for food and staple goods to account for all items in terms of quantity, quality and price.	I	S-PS

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UNIT OR SKILL TITLE ZONE II	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post Sec
Storage Procedures (cont'd.	The student will be able to segment foods according to food service standards, to proper storage areas: dry goods, walk-in and freezer.	I	S-PS
	The student will be able to demonstrate in written and practical exercises, the proper storage accounting required to verify department operational figures.	I	PS
	The student will use proper storage in food service while working in production labs to the satisfaction of the instructor.	I	S-PS
	Given instruction on storage, the student will describe, either written or orally, the general storage requirements to the satisfaction of the instructor.	I	S
	The student will use proper care of food in storage while working in production labs according to kitchen sanitation rules and to the satisfaction of the instructor.	I	S-PS
	The student will use proper storage of perishable and semi-perishable foods while working in production labs according to kitchen sanitation rules and the satisfaction of the instructor.	I	S-PS
	The student will use proper techniques in refrigerated storages while working in production labs according to kitchen sanitation rules and the satisfaction of the instructor.	I	S-PS
	The student will use proper techniques in frozen food storages while working in production labs according to kitchen sanitation rules and the satisfaction of the instructor.	I	S-PS
	The student will use general storage practices, provided on a sheet in class, while working in production labs to the satisfaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec
Storage Procedures (cont'd)	The student will organize and clean the storeroom at least once a month, while working in production labs according to sanitation rules and the satisfaction of the instructor.	I	S-PS
	The student will clean and organize refrigerated storages at least every two weeks, while working in production labs according to sanitation rules and the satisfaction of the instructor.	I	S-PS
	The student will organize frozen food storages, at least once each month, while working in production labs according to sanitation rules and the satisfaction of the instructor.	I	S-PS
ZONE III			
Cooking Methods	The student, given any recipe, will demonstrate, during lab production, the use of dry heat, moist heat and frying methods. This will be done according to the Food Trades Quality Standards and the satisfaction of the instructor.	T	S
	The student will be able to demonstrate in written and practical exercises, knowledge of the intricacies associated with dry, moist, combination methods of cooking techniques which are found in all food service operations, to the satisfaction of the instructor.	T	PS
	The student will demonstrate how to use the roasting method of dry heat cooking while preparing recipes in production labs, according to the Food Trades Quality Standards and the satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the panbroiling method of dry heat cooking while preparing recipes in production labs, according to the Food Trades Quality Standards and the satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the broiling method of dry heat cooking while preparing recipes in production labs, according to the Food Trades Quality Standards and the satisfaction of the instructor.	I	S-PS

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UNIT OR SKILL TITLE ZONE III	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec.
Cooking Methods	The student will demonstrate how to use the baking method of dry heat cooking while preparing recipes in production labs, according to the Food Trades Quality Standards and the satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the braising method of moist heat cooking while preparing recipes in production labs, according to the Food Trades Quality Standards and the satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the steaming method of moist heat cooking while preparing recipes in production labs, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the cooking in liquid method of moist heat cooking while preparing recipes in production labs, according to the Food Trade Quality Standards and satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the sauteing method of frying while preparing recipes in production labs, according to Food Trades Quality Standards and satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the grilling method of frying while preparing recipes in production labs, according to Food Trades Quality Standards and satisfaction of the instructor.	I	S-PS
	The student will demonstrate how to use the deep fat method of frying while preparing recipes in production labs, according to Food Trades Quality Standards and satisfaction of the instructor.	I	S-PS
Food Preparatio	The student will demonstrate the preparation of an a basic knowledge in the areas of salads, appetizers, vegetable cookery, quickbreads and layer cakes and cupcakes. This will be done according to the Food Trades Quality Standards, through written work and to the satisfaction of the instructor.	T	S

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UNIT OR SKILL TITLE ZONE III	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec
Food Preparation (cont'd.)	Given food and material necessary, the student will prepare 9 of the 15 recipes in the salads unit using proper preparation techniques, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using proper preparation techniques and given food and material necessary, the student will prepare 3 of the 5 recipes in the salads unit on salad dressings, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using provided worksheets and reference texts in class, the student will complete related worksheets on salds with 80% or better accuracy.	I	S
	Each student will complete a written or oral final exam consisting of 50 questions covering salads and salad dressings unit information with 80% or better accuracy.	I	S
	Using proper preparation techniques and given food and material necessary, each student will prepare 12 of the 26 recipes in the appetizer unit, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using provided worksheets and reference texts in class, each student will complete related worksheets on appetizers with 80% or better accuracy.	I	S
	Each student will complete a written or oral final exam consisting of 50 questions covering appetizer unit information with 80% or better accuracy.	I	S
	Using proper preparation techniques and given food and material necessary, each student will prepare 17 or the 40 recipes in the vegetable unit, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using provided worksheets and reference texts in class, each student will complete related worksheets on vegetable cookery with 80% or better accuracy.	I	S

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UNIT OR SKILL TITLE ZONE III	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec.
Food Preparation (cont'd.)	Each student will complete a written or oral final exam consisting of 50 questions covering vegetable unit information with 80% or better accuracy.	I	S
	Using proper preparation techniques and given food and material necessary, each student will prepare 12 or the 17 recipes in the stocks and soups unit according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using provided worksheets and reference texts in class, each student will complete related worksheets on stocks and soups with 80% or better accuracy.	I	S
	Each student will complete a written or oral final exam consisting of 50 questions covering stocks and soups unit information with 80% or better accuracy.	I	S
	Using proper preparation techniques and given food and material necessary, each student will prepare 11 of the 17 recipes in the quickbread unit, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using provided worksheets and reference texts in class, each student will complete related worksheets on quickbreads, with 80% or better accuracy.	I	S
	Each student will complete a written or oral final exam consisting of 50 questions covering quickbread unit information with 80% or better accuracy.	I	S
	Using proper preparation techniques and given food and material necessary, each student will prepare 7 of the 10 recipes in the layer cakes and cupcakes unit on: blended, creamed or whipped cakes, according to the Food Trades Qulity Standards and the satisfaction of the instructor.	I	S

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UNIT OR SKILL TITLE ZONE III	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post-Sec
Food Preparation (cont'd.)	Using proper preparation techniques and given food and material necessary, each student will prepare 3 of the 4 recipes in the layer cakes and cupcakes unit on variety frosting, according to the Food Trades Quality Standards and satisfaction of the instructor.	I	S
	Using provided worksheets and reference texts in class, each student will complete related worksheets on layer cakes and cupcakes with 80% or better accuracy.	I	S
	Each student will complete a written or oral final exam consisting of 50 questions covering layer cakes and cupcakes unit information with 80% or better accuracy.	I	S
	Each student will be able to relieve any member of the staff and be able to do the following successfully: prepare breakfast/short order items consisting of egg dishes, pancakes, waffles, meat dishes, breakfast side orders of potatoes, grits and toast.	I	PS
	Each student will be able to relieve any member of the staff and be able to do the following successfully: prepare pantry items consisting of salads, dressings, cold appetizers, cold plates and desserts.	I	PS
	Each student will be able to relieve any member of the staff and be able to do the following successfully: broil, fry, roast, saute, steam meats and vegetables.	I	PS
	Each student will be able to relieve any member of the staff and be able to do the following successfully: prepare baked/bread food items consisting of cakes, icings, pies, puddings, loaf breads and rolls.	I	PS

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UNIT OR SKILL TITLE	PERFORMANCE OBJECTIVE	OBJECTIVE TYPE T = Terminal I = Interim	LEVEL S = Secondary PS = Post Sec
ZONE III			
Food Preparation (cont'd.)	Each student will be able to relieve any member of the staff and be able to d the following successfully: prepare stocks; thick and clear soups. a. use bones or bases for stocks with water: brown, white, neutral and fish stocks; b. consommes - garnishes, vegetable soups (clear soups); c. prepare roux, incorporate stocks/rouxs, know when to add milk and/or cream (thick soups).	I	PS
	Each student will be able to relieve any member of the staff and be able to do the following successfully: prepare five basic sauces and compound sauces: a. espagnole (brown) sauce: borderlaise, mushroom, burgundy; b. bechamel (cream) sauce: mustard, cheese; c. veloute sauce: bercy sauce, veronique sauce; d. tomato sauce; e. hollandaise sauce	I	PS
	The student must demonstrate, in a written exercise and in practical exercises proficiency in the intricacies of basic food preparation, baking, cooking and finishing techniques, as established by the food service industry and to the instructor's specifications.	T	PS
ZONE IV			
Menu Terminologies	The student will use menu terms that are included in the culinary term sheet. The will be accomplished by conpleting definitions and by monthly testing.	T	S
	The student will plan and write menus using the proper terms and techniques as described in class. The student will develop a cyclic menu according to the menu writing standards.	T	S
	The student should be able to spell, identify and describe the menu terminologies which appear on Table d'hote, semi-aLa Carte and a La Carte menus.	T	PS

PROGRAM: CULINARY ARTS

PREPARED BY: PETER LEWIS - DOUG COONS

SCHOOL: N.H.V.T.C. BERLIN - GORHAM HIGH SCHOOL

	OCCUPATIONAL / TITLES	O. E. No.	D.O.T. No.
SECONDARY	Cook's Helper	17.2902	317.687
	Vegetable Cook	17.2902	314.781
	Asst. Soup/Sauce Cook	17.2902	314.781
	Asst. Roast/Broiler Ck.	17.2902	314.781
	Asst. Breakfast/Fry Ck.	17.2902	314.781
	Baker's Helper	17.2901	313.884
	Asst. Pastry Cook	17.2901	313.381
ARTICULATED	Pantry Worker	17.2902	981.010
	Breakfast/Fry Cook	17.2902	314.781
	Soup and Sauce Cook	17.2902	314.781
	Roast/Broiler Cook	17.2902	314.781
	Short Order Cook	17.2902	314.781
	Dishwasher	17.2902	318.781
	Baker	17.2901	526.781
	Pastry Cook	17.2901	313.381
	Second Cook	17.2902	.381
POST SECONDARY	Meatcutter	17.2903	.381
	Pattissaeur	17.2901	.381
	Garde Manger	17.2902	313.781
	Chef Du Froid	17.2902	.281
	Sous Chef	17.2902	.131
	Manager of Restaurant	17.2902	.131
	Chef	17.2902	131.010

	ZONE #1	ZONE #2	ZONE #3	ZONE #4	ZONE #5

UNIT OR SKILL TITLE

General Orientation
Personal Hygiene
Kitchen Sanitation
Safety
Equipment Safety
Insurance
Cooking Conversion
Ingredient Identification
Production Planning
Progress Procedures
Knife Cutting
Food Cost Control
Food Preparation Methods
Salads
Cold Appetizers
Sandwiches
Hot Appetizers
Vegetables
Soups
Sauces
Frying
Roasting
Braising
Broiling
Bread and Rolls
Desserts & Pastries
Short Processing
Purchasing
Receiving
Inventories
Food Costs, Prod. Sheets
Menu Development
Menu Planning
Menu Color Harmonies
Menu Color Harmonies
Kitchen Equipment
Job Opportunities
Job Opportunities
Communication
Communication
Employee Relations
Employee Relations
Problem Solving
Problem Solving
Profits - Incentive
Profits - Incentive
Annual Budget
Annual Budget

CODE:
R = REQ. RED
O = OPTIONAL